

III. REMARKS

Claims 1-75 were previously pending. Claims 60-75 are withdrawn as being directed to a non-elected invention. Claims 1-59 are cancelled by the present paper without prejudice to or disclaimer of the subject matter therein. New claims 76-122 have been added. Consideration of claims 76-122 is respectfully requested in light of the above amendments and the following remarks.

Rejections under 35 U.S.C. § 112

The Office Action indicated that **claims 5, 9, 18, 23-26, 35, 40, 41, 45, 50, 51, 55, and 57-59** are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the invention. The majority of these claims—in particular claims 5, 9, 18, 23, 26, 35, 40, 45, 50, 51, 55, 57, 58, and 59—were rejected based on the use of the term “substantially.” While each of these claims is canceled by the present paper rendering the rejection moot, the rejection is addressed because of the use of “substantially” in the new claims.

As recognized in MPEP §2173.05(b)(D),

“The term ‘substantially’ is often used in conjunction with another term to describe a particular characteristic of the claimed invention. [Substantially] is a broad term.”

Section 2173.05(b)(5) of the MPEP also cites to cases supporting the definiteness of claims that use the term “substantially.” In the present case, Applicants have utilized “substantially” with other terms to describe particular characteristics of the claimed invention in line with the understanding set forth in MPEP §2173.05(b)(D) and the cases cited therein. Accordingly, Applicants submit that the new claims containing the term “substantially” satisfy the requirements of the second paragraph of §112.

Claims 24 and 25 were rejected based on the use of “a height-to-width ratio of less than about 5:1” and “a height-to-width ratio ranging between about 1:1 and about 3:1,” respectively. Again, while each of these claims is canceled by the present paper rendering the rejection moot,

the rejection is addressed because of the use of similar language in the new claims. The use of “about” before a specific numeral range was objected to as reciting a broad range with a narrow range in the same claim. The recited language, however, does not recite a broad range and a narrow range. Rather, the language recites a single range. The recited language is similar to that set forth in MPEP §2173.05(b)(A) and held by the Board to be definite:

“The term ‘about’ used to define the area of the lower end of a mold as between 25 to about 45% of the mold entrance was held to be clear, but flexible. *Ex parte Eastwood*, 163 USPQ 316 (Bd. App. 1968).”

Similarly, in the present case the ranges of “less than about 5:1” and “between about 1:1 and about 3:1” are clear, but flexible ranges defining the height-to-width ratio. Accordingly, Applicants submit that the new claims containing the same claim language satisfy the requirements of the second paragraph of §112.

Rejections under 35 U.S.C. §§102 and 103

The Office Action indicated that the previously pending and elected claims were rejected under 35 U.S.C. §§102 and 103 as being unpatentable over U.S. Patent No. 6,770,094 to Fehling et al. (“the Fehling patent”), U.S. Patent Application Publication No. 2007/0010887 to Williams et al. (“the Williams application”), and combinations thereof. All previously pending and elected claims are canceled by the present paper. Therefore, these rejections are moot. However, the cited references are addressed below with respect to the new claims.

New Claims

New claims 76-122 have been added. Each of these claims recites elements that are not disclosed in the cited references. Therefore, Applicants submit that new claims 76-122 are patentable.

For example, new independent claim 76 recites in part:

an upper shell for engaging with the upper vertebra, the upper shell having at least one elongated projection extending along a majority of a length of an upper surface, the at least one elongated projection comprising a first portion comprised of a first shape-memory alloy and a second portion comprised of a second material, the second material being more rigid than the first shape-memory alloy;

a lower shell for engaging with the lower vertebra; and a plurality of resiliently deformable pillars extending between the upper and lower shells, the plurality of pillars comprising a second shape memory alloy.

However, even when combined the cited references do not disclose having an elongated projection extending along a majority of a length of an upper surface of an upper shell having a first portion comprising a shape-memory alloy and a second portion comprising a second material that is more rigid than the shape-memory alloy of the first portion. Neither the Fehling patent nor the Williams application discloses an elongated projection extending along a majority of a length of a surface of a shell as recited. Further, neither the Fehling patent nor the Williams application discloses an elongated projection having a first portion formed of a first material and a second portion formed of a more rigid second material. There would be no reason, other than hindsight, for modifying the cited references to include such limitations. Accordingly, even when combined the Fehling patent and the Williams application fail to disclose all of the recited elements of independent claim 76. Therefore, Applicants submit that new independent claim 76 should be allowable over the cited references. Claims 77-102 depend from and further limit independent claim 76 and, many or all, include additional limitations not disclosed in the cited references. For at least these reasons, claims 77-102 should be allowable over the cited references.

New independent claim 103 recites in part:

an upper shell for engaging the upper vertebra, the upper shell having an upper pair of elongated projections extending substantially parallel to one another along a length of an upper surface, the upper elongated projections comprising a first shape-memory alloy, a majority of the upper shell comprising a second material more rigid than the first shape-memory alloy;

a lower shell for engaging the lower vertebra, the lower shell having a lower pair of elongated projections extending substantially parallel to one another along a length of a lower surface, the lower elongated projections comprising a second shape-memory alloy, a majority of the lower shell comprising a fourth material more rigid than the second shape-memory alloy; and

a plurality of resiliently deformable pillars extending between the upper and lower shells, the plurality of pillars comprising a third shape-memory alloy.

Even when combined the cited references do not disclose “an upper pair of elongated projections extending substantially parallel to one another along a length of an upper surface, the upper elongated projections comprising a first shape-memory alloy, a majority of the upper shell comprising a second material more rigid than the first shape-memory alloy.” Further, the references do not disclose “a lower pair of elongated projections extending substantially parallel to one another along a length of a lower surface, the lower elongated projections comprising a second shape-memory alloy, a majority of the lower shell comprising a fourth material more rigid than the second shape-memory alloy.” Neither the Fehling patent nor the Williams application discloses a pair of elongated projections extending substantially parallel along the length of a surface of a shell as recited. Further, neither the Fehling patent nor the Williams application discloses forming the pair of elongated projections from a shape-memory alloy and the majority of the shell from a more rigid material. There would be no reason, other than hindsight, for modifying the cited references to include such limitations. Accordingly, even when combined the Fehling patent and the Williams application fail to disclose all of the recited elements of independent claim 103. Therefore, Applicants submit that new independent claim 103 should be allowable over the cited references. Claims 104-121 depend from and further limit independent claim 103 and, many or all, include additional limitations not disclosed in the cited references. For at least these reasons, claims 104-121 also should be allowable over the cited references.

New independent claim 122 recites in part:

an upper shell for engaging the upper vertebra, the upper shell having an upper pair of elongated projections extending

substantially parallel to one another along a majority of a length of an upper surface, the upper elongated projections comprising an anchor portion extending substantially perpendicular from the upper surface and a tip portion extending from the anchor portion at an oblique angle relative to the upper surface, the anchor portion comprising a first material and the tip portion comprising a second material, the first material being harder than the second material, the second material being a shape-memory alloy;

a lower shell for engaging the lower vertebra, the lower shell having a lower pair of elongated projections extending substantially parallel to one another along a majority of a length of a lower surface, the lower elongated projections comprising an anchor portion extending substantially perpendicular from the lower surface and a tip portion extending from the anchor portion at an oblique angle relative to the lower surface, the anchor portion comprising a third material and the tip portion comprising a fourth material, the third material being harder than the fourth material, the fourth material being a shape-memory alloy; and

nine resiliently deformable pillars extending between the upper and lower shells, eight of the pillars positioned adjacent a perimeter of the upper and lower shells and one of the pillars positioned substantially centrally within the perimeter of the upper and lower shells, each of the pillars having a fillet portion adjacent the upper and lower shells and a central portion of reduced thickness relative to the fillet portions, each of the pillars comprising a shape-memory alloy.

Even when combined the cited references do not disclose such an implant. As discussed above, the cited references do not disclose pairs of elongated projections, let alone elongated projections having portions formed of two different materials, one being a shape-memory alloy and the other being harder than the shape-memory alloy. The cited references also do not disclose resiliently deformable pillars having the recited structural limitations. There would be no reason, other than hindsight, for modifying the cited references to include such limitations. Accordingly, even when combined the Fehling patent and the Williams application fail to disclose all of the recited elements of independent claim 122. Therefore, Applicants submit that new independent claim 122 should be allowable over the cited references.

IV. Conclusion

It is believed that all matters set forth in the Office Action have been addressed and that pending claims 76-122 are in condition for allowance.

The examiner is invited to call the undersigned at the below-listed telephone number if a telephone conference would expedite or aid the prosecution and examination of this application.

Respectfully submitted,

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